Adoption Dynamics of Improved Sugarcane Cultivation in Chittoor District of Andhra Pradesh

G K Siddeswari, T Lakshmi and S V Prasad

Department of Agricultural Extension, S V Agricultural College, Tirupati 517 502

ABSTRACT

Adoption of the improved technology is the ultimate aim of the social scientists for enhancing the production and income of the farming system. This study was conducted in Chittoor district of Andhra Pradesh in 2014 with the sample size of 120 respondents. The ex-post facto research design was used for the study. The findings revealed that around 56.67 per cent of the respondents were medium category adopters of ISCP (Improved sugarcane cultivation practices). The study revealed that majority of the sugarcane growers had poor adoption level about soil testing, seed treatment, bio-fertilizer application, intercropping and mechanization in sugarcane. Thus, the study suggests for immediate attention of the extension functionaries for convincing the sugarcane growers which would result in the higher adoption and increase their income.

Key words : Adoption; Improved technology; Sugarcane growers.

Adoption dynamics refers to the rate of adoption commensurate with the system ability to cope with it. The increased production of sugarcane by way of adoption of new technologies necessitated modernization of sugar industry, thereby, boosting the agriculture based economy. The modernized sugar industries can crush any quantity of cane and to produce sugar products which resulted into increasing demand for sugarcane. Although enough viable and adoptive technologies have been developed but many of these have not reached to the ultimate growers. There may be several reasons for this including the technological as well social aspects. This study focuses on the factors and its relationship with each other with regard to sugarcane cultivation in Chittoor district of Andhra Pradesh.

MATERIAL AND METHODS

The study was conducted in Chittoor district of Andhra Pradesh. An extensive survey was carried out in sugarcane growing mandals, Vadamalapeta and Renigunta were selected based on the highest area under sugarcane cultivation. From each mandal two villages were selected Vengalrajugandriga and Kadirimangalam ,Mulagamudi and Allikesam respectively for the study by using simple random sampling. A sample of 120 sugarcane growers were drawn from sugarcane growing villages using proportionate random sampling technique. Based on the expert's opinion, eighteen recommended sugarcane cultivation practices were selected for studying the extent of adoption. All the selected farmers were interviewed personally using a well-structured interview schedule. For analysis of collected data, descriptive statistics (frequency and percentage) and analytical statistics were used in the study.

RESULTS AND DISCUSSION

Socio-economic profile of the sugarcane growers:

In order to know the background and socio-economic status of the respondents, it is important to document these characteristics. In all, 8 socio-economic variables were studied by using appropriate tools. The analyzed data of Table 1 showed that majority (70.00 %) of the respondents belonged to middle age followed by those of old (16.67%) and young (13.33%) age categories.

Thirty per cent of the respondents were educated up to high school, equal (26.67% each) proportion of the respondents were found in illiterate and primary levels and also equal (6.66% each) proportion of the respondents were found in middle and intermediate levels and only 3.34 per cent were graduates and there were no post graduates in these villages.

Forty per cent of the sugarcane growers were operating with marginal land holding (up to

Table 1. Profile of sugarcane growers (n=120)

Variables	Frequency	Percentage	Mean	S.D
1) Age Young (<35 year)	16	13.33	_	_
Middle (36-55 years)	84	70.00		
Old (>56 year)	20	16.67		
2) Education				
Illiterate level	32	26.67	_	_
Primary level	32	26.67		
Middle level	8	6.66		
High school	36	30.00		
Intermediate	8	6.66		
Graduate	4	3.34		
Post graduate	0	00.00		
3) Land holding				
Marginal land holding (up to 2.50 acres)	48	40.00	_	_
Small land holding (2.51 to 5 acres)	24	20.00		
Medium land holding (5.01 to 10 acres)	44	36.67		
Large land holding (above 10 acre)	4	3.33		
4) Farming Experience				
Low (Mean - SD)	24	20.00	19.8	9.58
Medium (Mean ± SD)	72	60.00		
High (Mean + SD)	24	20.00		
5) Annual Income				
Low (Up to 2 lakh)	64	53.34	1.5	0.56
Medium (2.01 to 5 lakh)	52	43.33		
High (Above 5.01 lakh)	4	3.33		
6) Extension contact				
Low (Mean - SD)	17	14.16	2.64	1.18
Medium (Mean ± SD)	44	36.67		
High (Mean + SD)	59	49.16		
7) Scientific orientation				
Low (Mean - SD)	18	15.00	16.14	2.64
Medium (Mean ± SD)	38	31.67		
High (Mean + SD)	64	53.33		
8) Training				
Participated	92	76.67	0.76	0.42
Non-participated	28	23.33		

Table 2. Distribution of sugarcane growers according to their adoption level

Categories	Frequency	Percentage
Low	20	16.66
Medium	68	56.67
High	32	26.67
Total	120	100.00

Table 3. Distribution of the sugarcane growers according to adoption level of selected improved sugarcane cultivation practices (n=120).

	Level of adoption								
	Complete			Partial			No		
Improved practice	F	P	Rank	F	P	Rank	F	P	Rank
1) Field selection	120	100.00	I	00	00.00	-	00	00.00	-
2) Field preparation	120	100.00	I	00	00.00	-	00	00.00	-
3) Soil testing	28	23.33	XIV	24	20.00	IV	68	56.67	IV
4) Improved varieties	100	83.34	X	16	13.33	VI	4	3.33	VI
5) Seed selection	100	83.34	X	16	13.33	VI	4	3.33	VI
6) Seed treatment	00	00.00	-	4	3.33		116	96.67	II
7) Seed rate	120	100.00	I	00	00.00	-	00	00.00	-
8) Spacing	120	100.00	I	00	00.00	-	00	00.00	-
9) Fertilizer application	120	100.00	I	00	00.00		00	00.00	-
10) Organic manure application	60	50.00	XIII	60	50.00	I	00	00.00	-
11) Bio fertilizer application	12	10.00	XVI	40	33.33	II	68	56.67	IV
12) Irrigation management	84	70.00	XII	32	26.67	III	4	3.33	VI
13) Weed management	120	100.00	I	00	00.00	-	00	00.00	-
14) Earthing up	120	100.00	I	00	00.00	-	00	00.00	-
15) Plant protection measures	120	100.00	I	00	00.00	-	00	00.00	-
16) Ratoon management	120	100.00	I	00	00.00	-	00	00.00	-
17) Intercrops in sugarcane	00	00.00	-	00	00.00	-	00	100.00	I
18) Mechanization in sugarcane	16	13.33	XV	24	20.00	IV	120	66.67	III

Table 4. Correlation coefficient of independent variables of sugarcane growers with their adoption level of improved sugarcane practices.

Variables	Correlation coefficient
Age	-0.1534NS
Education	0.3846**
Land holding	0.5405**
Farming experience	-0.1836NS
Annual income	0.6799**
Extension contact	0.2006*
Scientific orientation	0.4922**
Training	0.3015**

2.5 acres) followed by 36.67 per cent with medium land holding (5.01-10 acres), 20.00 per cent with small land holding (2.51-5.00 acres) and only 3.33 per cent with large land holding (above 10 acres).

Majority of the respondents (60.00 %) had medium level of farming experience followed by equal (20.00% each) proportion of the respondents with low and high level of farming experience.

More than half (53.34 %) of the respondents had low level of annual income (Up to 2 lakhs) followed by 43.33 per cent with medium income (2.01 to 5 lakhs) and 3.33 per cent with low annual income (Up to 2 lakhs).

Regarding extension contact, 49.16 per cent of the respondents had high level of extension contacts followed by medium (36.67%) and low (14.16%) levels.

Around fifty three per cent had high level of scientific orientation followed by medium (31.67%) and low (15.00%) levels of scientific orientation.

A great majority of the respondents (76.67 %) were participated in training and the remaining 23.33 per cent had not participated in the training.

The results were in conformity with the findings of Naik (2005), Maraddi (2006), Shivanand (2007) and Sandeep Chouhan et al. (2013).

Overall adoption of ISCP :

The level of adoption in respect of improved sugarcane cultivation practices was studied by adding individual scores received on different practices. On the basis of the total score, they were categorized and the results were presented in Table 2. Analyzed data showed that 56.67 per cent had medium level of adoption of ISCP and 26.67 per cent and 16.66 per cent had high and low adoption levels, respectively.

The possible reason for the above findings may be the tendency of growers to adopt only those practices, which they feel are simple, involve low cost and are effective in getting higher yield. The results suggest a need for greater extension effort to provide know how of the improved sugarcane cultivation practices to the respondents so that their adoption level is enhanced. Moreover, it was observed that farmers with more economic resources and extension contact were able to adopt more production technologies than others. The

works of Kanavi (2000) and Sandeep Chouhan et al. (2013) also supports the present finding.

Practice-wise level of adoption of ISCP :

In order to ascertain level of adoption of improved sugarcane cultivation practices, the responses of respondents were collected on 18 selected practices and presented in Table 3. These were categorized in to three level of adoption i.e. complete (score 3), partial (2 score) and nil adoption (0 score). Regarding field selection and field preparation, all (100.00%) the respondents were practiced selection and preparation of the fields. The majority of the respondents (56.67 %) did not adopt soil testing at all only 23.34 per cent indicated complete adoption and 20.00 per cent showed a partial adoption.

The majority of sugarcane growers (83.34 %) had complete adoption of improved recommended varieties while 13.33 per cent had partially adopted while 3.33 per cent did not adopt improved varieties. Regarding seed selection, 83.34 per cent respondents had complete adoption while, 13.33 per cent had indicated partial adoption and only 3.33 per cent were in low adoption category. The majority of growers (96.67 %) did not adopt seed treatment while 3.33 per cent partially adopted. However, none had adopted seed treatment completely.

Regarding seed rate, spacing and fertilizers application all the respondents completely adopted the recommendation. The half of the respondents (50.00 %) indicate complete adoption while remaining half of the respondents fall in partial adoption category regarding organic manures application. 56.67 per cent of the respondents did not adopt bio-fertilizer application while 33.33per cent had partially adopted and only 10.00 per cent indicate complete adoption of bio-fertilizer application.

Majority of the respondents (70.00%) had complete adoption of irrigation management practice while 26.67 per cent were in partial adoption category and only 3.33 per cent fall in non adopted category with regard to irrigation management practice. All the respondents completely adopted weed management , earthing up, plant protection measures and ratoon management practices. All the respondents did not adopt intercroping in sugarcane cultivation.

Regarding mechanization, majority (66.67%) of the respondents had not adopted and 20.00 per cent had partially adopted whereas, only 13.33 per cent of respondents completely adopted. Table 3 consists of eighteen improved sugarcane cultivation practices and their level of adoption as per recommendation. All the sugarcane growers completely adopted the practices like field preparation, seed rate, spacing, fertilizer application, earthing up, plant protection measures and ratoon management. And all the respondents not adopted intercropping in sugarcane cultivation.

Relationship between Adoption dynamics and its factor:

With the assumption that adoption is influenced by various socio-economic characteristics of the respondents, the relationship of various socio-economic variables with the level of adoption ISCP among the sugarcane growers, Pearson product moment correlation coefficient 'r' was computed and compared. The result presented in Table 3.

From the data depicted in Table 4, it is clear that correlation coefficient of five variables viz. education, land holding, annual income, scientific orientation, training were significant at 0.01% level where as extension contact significant at 0.05 level of probability with adoption of ISCP. The findings revealed that education, land holding, annual income, scientific orientation, extension contact, training were significant and age ,farming experience were non-significant.

CONCLUSION

On the basis of above-said discussion, it could be concluded that majority of respondents belonged to medium adoption category. Further, majority of sugarcane growers had poor adoption level on practices Viz. soil testing, seed treatment, bio-fertilizer application, intercropping and mechanization in sugarcane. This is mainly due to the less contact with the extension agents. The findings of this investigation will help the extension system to redesign the activities for the transfer of technologies in sugarcane crop on the production, productivity, marketing and socio-economic status of sugarcane growers. It will also help in identifying major factors for high yield in the sugarcane production, technologies and feed back for the research system. The results will help the policy makers, administrators and planners to match the existing situation in sugarcane cultivation practices and sugar industry. Moreover, higher adoption of the sugarcane technology will enhance the production, which in turn it will lead to the sustainable livelihood and improved quality of life of the sugarcane growers.

LITERATURE CITED

Kanavi V P 2000 A study on the knowledge and adoption behaviour of Sugarcane growers in Belgaum district of Karnataka. *M. Sc. (Ag.) Thesis.* JNKVV, Jabalpur, MP.

Maraddi G N 2006 A analysis of sustainable cultivation practices followed by Sugarcane growers in Karnataka. *Ph.D. Thesis.* University of Agricultural Sciences, Dharwad, Karnataka.

Naik R D 2005 A study on knowledge and adoption pattern on improved sugarcane practices in Bidar district of Karnataka state, *M.Sc.(Ag.) Thesis.* University of Agricultural Sciences, Dharwad, Karnataka.

Sandeep Chouhan, Singh S R K, Pande A K and Gautam U S 2013 Adoption dynamics of improved sugarcane cultivation in Madhya Pradesh. *Indian Research Journal of Extension Education*, 13(2):26-30

Shivanand P 2007 Human resource development activities initiated by Nandi sugar factory Bijapur district of Karnataka state, *M.Sc. (Ag.) Thesis.* University of Agricultural Sciences, Dharwad, Karnataka.